

REMARKS

In the last Office Action, the Examiner objected to claims 1 and 6 as containing informalities. Claims 1-3, 5¹ and 6 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 3,313,101 to Carrol in view of U.S. Patent No. 5,867,871 to Tasman. Claim 4² was rejected under 35 U.S.C. §103(a) as being unpatentable over Carroll in view of Tasman and further in view of U.S. Patent No. 6,070,294 to Perkins et al. ("Perkins"). Additional art was cited of interest.

In accordance with this response, the specification has been suitably revised to correct informalities, provide antecedent basis for the claim language, and bring it into better conformance with U.S. practice. Original independent claims 1 and 6 have been amended to further patentably distinguish from the prior art of record and to overcome the objections raised by the Examiner. Original claims 1-6 have also been amended in formal respects to improve the wording and to bring them into better conformance with U.S. practice.

¹ The Examiner grouped claim 4, instead of claim 5, in this ground of rejection. However, it is clear from paragraphs 7 and 8 of the Office Action that the Examiner intended to reject claims 1-3, 5 and 6 under 35 U.S.C. §103(a) based on the combination of Carroll and Tasman and to reject claim 4 based on the combination of Carroll, Tasman and Perkins.

² See footnote 1.

New claims 7-20 have been added to provide a fuller scope of coverage. The title of the invention has been changed to "PORTABLE APPARATUS WITH OPENING/CLOSING LID AND A TIMEPIECE ARMOR ASSEMBLY" to more clearly reflect the invention to which the amended and new claims are directed. A new abstract which more clearly reflects the invention to which the amended and new claims are directed has been substituted for the original abstract.

Applicants request reconsideration of their application in light of the following discussion.

Brief Summary of the Invention

The present invention is directed to a portable apparatus with an opening/closing lid and to a timepiece armor assembly.

Figs. 7A-7B show a conventional portable apparatus in the form of a timepiece having an opening/closing lid. As described in the specification (pgs. 1-4), one problem with the conventional timepiece structure shown in Figs. 7A-7B is that since torsion springs 10 for biasing the lid 3 between open and closed positions are exposed to the exterior of the timepiece, there is a high probability that end portions 10a of the torsion springs 10 may caught by a user's fingers or clothing during use of the timepiece. Furthermore, the exposed portions of the torsion springs 10 detract from the aesthetic appeal of the timepiece.

Moreover, since the torsion springs 10 are wound around the pivot axle 7 supporting the convex portion 9 of the case band 4 and the fitting portions 8 of the lid 3, the biasing function of the torsion springs 10 is deteriorated during repetitive opening and closing of the lid 3. In this regard, the torsion springs 10 as well as the convex portion 9 and the fitting portions 8 of the case band 4 and the lid 3 may be subjected to excessive stresses and even breakage when the lid 3 is excessively pivoted in the opening direction.

The present invention overcomes the drawbacks of the conventional art. Figs. 1-4 show an embodiment of a portable apparatus 21 according to the present invention embodied in the claims. The portable apparatus 21 has an armor assembly 22 comprised of a main part 25 having opposite main surfaces, a frame portion 31, and a support portion 36. The frame portion 31 has a hollow bore 37 having a central longitudinal axis B. A lid 26 is pivotally connected to the frame portion 31 for undergoing pivotal movement between a closed position (Fig.2) in which the lid 26 covers a preselected one of the main surfaces of the main part 25 (e.g., an upper surface) and an open position (Fig. 3) in which the lid 26 does not cover the preselected main surface. The lid 26 has at least one support portion 41.

A pivot axle 38 connects the support portions 41, 36 of the lid and the main part together to allow pivotal

movement of the lid 26 between the open and closed positions about a pivotal axis A. The pivot axle 38 is positioned relative to the frame portion 31 so that the central longitudinal axis B of the hollow bore 37 is spaced-apart (see distance D in Fig. 2) from the pivotal axis A of the pivot axle 38 in a radial direction of the frame portion 31. Stated otherwise, the central longitudinal axis B of the hollow bore 37 does not intersect the pivotal axis A of the pivot axle 38. A spring member 27 is disposed in a compressed state in the hollow bore 37 of the frame portion 31 for applying a spring force to the support portion 41 of the lid 26 to bias the lid 26 toward at least one of the open and closed positions.

In another aspect, the present invention is directed to a timepiece armor assembly having a main part 25 having a case band 31 and a support portion 36. The case band 31 has a hollow bore 37 having a central longitudinal axis B. A glass cover 32 is mounted to a surface of the case band 31. A lid 26 has at least one support portion 41 and is pivotally connected to the case band 31 for undergoing pivotal movement between a closed position (Fig. 2) in which the lid 26 covers the glass cover 32 and an open position (Fig. 3) in which the lid 26 does not cover the glass cover 32. A pivot axle 38 connects the support portions 41, 36 of the lid 26 and the case band 31 together to allow pivotal movement of the lid 26 between the open and closed positions about a pivotal axis A.

The pivot axle 38 is positioned relative to the case band 31 so that the central longitudinal axis B of the hollow bore 37 is spaced-apart from the pivotal axis A of the pivot axle 38 in a radial direction of the case band 31. A spring member 27 is disposed in a compressed state in the hollow bore 37 of the case band 31 for applying a spring force to the support portion 41 of the lid 26 to bias the lid 26 toward at least one of the open and closed positions.

By the foregoing construction of the portable apparatus and the timepiece armor assembly according to the present invention, the biasing member is disposed in a hollow bore formed in the frame portion or case band (i.e., the biasing member is not wound around the pivot axle). As a result, the biasing member is not exposed to the outside of the portable apparatus or timepiece armor assembly, thereby improving the external aesthetic appearance of the portable apparatus or timepiece armor. Furthermore, there is no fear that a user's finger or clothing will be caught by any portion of the biasing member during use of the portable apparatus or timepiece armor assembly.

Moreover, by positioning the pivot axle relative to the frame portion or case body so that the central longitudinal axis of the hollow bore is spaced-apart from the pivotal axis of the pivot axle in a radial direction of the frame portion or the case body (i.e., the central longitudinal

axis does not intersect the pivotal axis), deterioration of the biasing function of the biasing member is prevented during repetitive opening and closing of the lid and during excessive pivotal movement of the lid in the opening direction.

Traversal of Prior Art Rejections

Claims 1-3, 5³ and 6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Carroll in view of Tasman. Applicants respectfully traverse this rejection and submit that the combined teachings of Carroll and Tasman do not disclose or suggest the subject matter recited in amended independent claims 1, 6 and dependent claims 2, 3 and 5.

Amended independent claim 1 is directed to a portable apparatus and requires an armor assembly comprised of a main part having opposite main surfaces, a frame portion and a support portion, the frame portion having a hollow bore having a central longitudinal axis. Claim 1 further requires a lid having at least one support portion and being pivotally connected to the frame portion of the main part for undergoing pivotal movement between a closed position in which the lid covers a preselected one of the main surfaces of the main part and an open position in which the lid does not cover the preselected main surface, and a pivot axle connecting the support portions of the lid and the main part together to

³ See footnote 1.

allow pivotal movement of the lid between the open and closed positions about a pivotal axis, the pivot axle being positioned relative to the frame portion of the main part so that the central longitudinal axis of the hollow bore is spaced-apart from the pivotal axis of the pivot axle in a radial direction of the frame portion. Claim 1 further requires a spring member disposed in a compressed state in the hollow bore of the frame portion of the main part for applying a spring force to the support portion of the lid to bias the lid toward at least one of the open and closed positions. No corresponding structural and functional combination is disclosed or suggested by the prior art of record.

The primary reference to Carroll discloses a case 10 for a watch having a base (e.g., main part with frame portion) 12 and a cover 14 pivotally mounted for movement toward and away from the base 12 by a spring loaded hinge 18 (col. 2, lines 38-46 and Fig. 1). As recognized by the Examiner, Carroll does not disclose or suggest the specific structure of the main part of the armor assembly, including the hollow bore of the frame portion and the spring member disposed in the hollow bore, as recited in amended claim 1. Moreover, Carroll also does not disclose or suggest a pivot axle being positioned relative to the frame portion of the main part so that a central longitudinal axis of a hollow bore formed in

the frame portion is spaced-apart from the pivotal axis of the pivot axle in a radial direction of the frame portion, as recited in amended claim 1.

The secondary reference to Tasman discloses a hinge structure interconnecting first and second members. As shown in Figs. 5-6 of Tasman which have been reproduced in Exhibit A attached herewith, a first member 50 is mounted for pivotal movement relative to a second member 20 about a pivotal axis of a pivot axle 32. A hinge structure comprised of a clamping member 10 biases the first member 50 toward open and closed positions (Figs. 5-6). The clamping member 10 has a frame portion 11, 12 provided with a hollow bore 39 within which a biasing member 37 is disposed for applying a biasing force to a support portion 34 of the second member 20.

Thus Tasman discloses a hinge structure having a frame portion provided with hollow bore within which a biasing member is disposed for applying a biasing force to a support portion of a member mounted to undergo pivotal movement about a pivotal axis of a pivot axle. However, Tasman clearly does not disclose or suggest the specific positional relationship between a central longitudinal axis of the hollow bore and the pivotal axis of the pivot axle in a radial direction of the frame portion. More specifically, Tasman does not disclose or suggest that the pivot axle is positioned relative to the frame portion so that the central longitudinal axis of the

hollow bore formed in the frame portion is spaced-apart from the pivotal axis of the pivot axle in a radial direction of the frame portion, as recited in amended claim 1. As shown in Exhibit A, in Tasman a central longitudinal axis X of the hollow bore 39 is not spaced-apart from a pivotal axis Y of the pivot axle 32. Stated otherwise, in Tasman the central longitudinal axis X of the hollow bore 39 intersects the pivotal axis Y of the pivot axle 32.

In contrast, as shown in an embodiment of the portable apparatus of amended claim 1 illustrated in Figs. 2-3, a central longitudinal axis B of the hollow bore 37 formed in the frame portion 31 is spaced-apart by a distance D from the pivotal axis A of the pivot axle 38 in a radial direction of the frame portion 31 (i.e., the central longitudinal axis B does not intersect the pivotal axis A).

Since Tasman does not disclose or suggest the foregoing structure of the portable apparatus recited in amended independent claim 1, it does not cure the deficiencies of Carroll. Accordingly, one of ordinary skill in the art would not have been led to modify the references to attain the claimed subject matter.

Amended independent claim 6 is directed to a timepiece armor assembly and requires a pivot axle connecting support portions of a lid and a case band together to allow pivotal movement of the lid between open and closed positions

about a pivotal axis, the pivot axle being positioned relative to the case band so that a central longitudinal axis of a hollow bore of the case band is spaced-apart from the pivotal axis of the pivot axle in a radial direction of the case band. No corresponding structural combination is disclosed or suggested by the combined teachings of Carroll and Tasman as set forth above for amended independent claim 1.

Claims 2, 3 and 5 depend on and contain all of the limitations of amended independent claim 1 and, therefore, distinguish from the references at least in the same manner as claim 1.

In view of the foregoing, applicants respectfully request that the rejection of claims 1-3, 5 and 6 under 35 U.S.C. §103(a) as being unpatentable over Carroll in view of Tasman be withdrawn.

Claim 4⁴ was rejected under 35 U.S.C. §103(a) as being unpatentable over Carroll in view of Tasman and further in view of Perkins. Applicants respectfully traverse this rejection and submit that the combined teachings of Carroll, Tasman, and Perkins do not disclose or suggest the subject matter recited in amended dependent claim 4.

Carroll in view of Tasman does not disclose or suggest the subject matter recited in amended independent claim 1 as set forth above for the rejection of independent

⁴ See footnote 1.

claims 1-3, 5 and 6 under 35 U.S.C. §103(a). Claim 4 depends on and contains all of the limitations of amended independent claim 1 and, therefore, distinguishes from the references at least in the same manner as claim 1.

The Examiner cited the reference to Perkins for its disclosure of a hinge assembly having a fitting portion provided with plural flat pressure receiving surfaces. However, Perkins does not disclose or suggest the specific structural combination of the portable apparatus recited in amended independent claim 1, including the specific positional relationship between a central longitudinal axis of a hollow bore within which a biasing member is disposed and a pivotal axis of a pivot axle in a radial direction of the frame portion. Since Perkins does not disclose or suggest this structural feature, it does not cure the deficiencies of Carroll as modified by Tasman. Accordingly, one of ordinary skill in the art would not have been led to modify the references to attain the claimed subject matter.

In view of the foregoing, applicants respectfully request that the rejection of claim 4 under 35 U.S.C. §103(a) as being unpatentable over Carroll in view of Tasman and further in view of Perkins be withdrawn.

Applicants respectfully submit that newly added claims 7-20 also patentably distinguish from the prior art of record.

New independent claims 10 and 17 are directed to a portable apparatus. Claim 10 requires a pivot axle connecting the support portions of the cover member and the case body together to allow pivotal movement of the cover member between the first and second positions about a pivotal axis, the pivot axle being positioned relative to the cover member so that the central longitudinal axis of the hollow bore does not intersect the pivotal axis of the pivot axle. Likewise, claim 17 requires a pivot axle connecting the support portions of the cover member and the case body together to allow pivotal movement of the cover member between the first and second positions about a pivotal axis, the pivot axle being positioned relative to the cover member so that the central longitudinal axis of each of the hollow bores is spaced-apart from the pivotal axis of the pivot axle in a radial direction of the case body. No corresponding structural combinations are disclosed or suggested by the prior art of record as set forth above for amended independent claims 1 and 6.

New claims 7-9, 11-16 and 18-20 depend on and contain all of the limitations of independent claims 1, 10 and 17, respectively, and, therefore, distinguish from the references at least in the same manner as claims 1, 10 and 17.

In view of the foregoing amendments and discussions,
the application is now believed to be in allowable form.
Accordingly, favorable reconsideration and passage of the
application to issue are most respectfully requested.

Respectfully submitted,

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Signature

March 14, 2005

Date